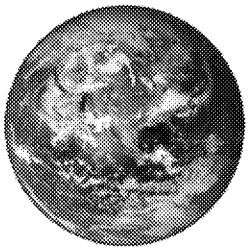

# Arc Ecology

*Environment, Economy, Society, & Security*



**"The moral arc of the universe is long, but it bends toward justice"**
*Reverend Martin Luther King Jr.*
*Where Do We Go From Here?*
*August 1966*

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**August 9, 2012**

**Summary of the independent technical review of Parcel E2 Landfill Hunter's Point Shipyard performed by Arc Ecology's three technical experts.**

Dear Bayview Hunters Point community member and fellow San Francisco residents, we wanted to provide you with a summary of our technical experts review of the Parcel E2 landfill. The US Navy has proposed a capping and containment approach as the long-term remedy for the Parcel E2 landfill in Hunter's Point Shipyard in their Draft Record of Decision. A cap is an engineered top placed on a landfill to prevent human and environmental exposure. In this case, the Navy is proposing to construct the cap of a geosynthetic liner and two feet of clean soil. As part of this remedy, the Navy will also remove and dispose contaminated soil in certain areas, separate and dispose of materials and soil with radiological contamination, install below-ground barriers to limit groundwater flow from the landfill, install a rock wall along the shoreline, and provide long-term maintenance and monitoring of the landfill.

Arc Ecology, as the community technical advisor to the India Basin Neighborhood Association under their US EPA Technical Assistance Grant (TAG), hired three technical experts, Mark Wheeler (Landfill Expert) Steve Bump, (Radiation Specialist), and Greg Brorby, Toxicologist (Risk Assessment)) to conduct an independent technical review of Parcel E2. Parcel E2 is considered by many to be the most contaminated and controversial parcel in the Navy's Hunter Point Shipyard Cleanup Program.
The goal of an "independent" review is to provide an unbiased assessment of the data quality and compliance with "state of the practice" methodology without influence of other parties. It is important to keep in mind that this independent review could only review the Navy's evaluations using existing approved standards of practice, guidances and regulations. The review panel could not conduct independent sampling of soil, water and air, nor could it revise the methods used for assessing remedial risks for Superfund sites. Finally, while members of the review panel were able to analyze the adequacy and recommendations regarding the Navy's Parcel E2 Draft Record of Decision, neither they nor Arc Ecology have any authority to require changes or further actions. Arc Ecology is not a governmental agency.

The scope of this work included hiring these technical experts to review relevant Navy documents relating to Parcel E2 (Remedial Investigation/Feasibility Study, Draft Record of Decision, and the Radiological Addendum to the RI/FS). In addition, these three technical experts visited the Parcel E2 site during their technical review of the Navy's documents. Arc Ecology conducted a rigorous due diligence process in hiring these technical experts to ensure a fair and unbiased technical review of the Navy's documents for Parcel E2.

Arc Ecology held two community meetings: the first meeting was held on July 10, 2012 at the Bayview Opera House to introduce the technical experts to the community and to also give the community an opportunity to voice their concerns about Parcel E2. The second meeting was again held at the Bayview Opera House on August 8th. At this meeting, the technical experts presented their findings after their in depth review of the Navy's documents for Parcel E2 and identified several recommendations as the Navy moves forward into the Remedial Design/Remedial Action phase for this parcel.
Below is a summary of the technical expert's findings and recommendations, and some responses to community concerns. The technical experts' comment letters can be found at Arc Ecology's website o upon request, Arc Ecology can mail copies of the comment letters to interested parties.

**Brief summary of the Technical Experts Findings:**
**Landfill (Mark Wheeler)**

- Based upon the data collected by the Navy, sufficient knowledge of the nature and extent of contamination supports the proposed remedy of capping and containment.
- The capping and containment approach, using an engineering cap and institutional controls, is the most widely used and accepted practice for landfills of this size and general composition of Parcel E2 landfill.
- The selected remedy should be capable in providing levels of protection for human health and the environment that meet or exceed environmental regulatory standards.

**Radiological (Steve Bump)**

- The landfill surface has been characterized from a radiological perspective and the proposed remedy is adequately designed to clean up any radiological anomalies at or near the surface.
- The interim (current) cap was constructed following the 2000 landfill fire from imported fill which primarily came from a BART excavation and other sources in the Bay Area. Elevated levels above background of radium 226, stroniutm-90 and Cesium-137 were detected in the imported fill.
- Radiological risk is based upon exposure to the radioactive material. The proposed remedy reduces the risk from surface radioactive material by removing all material and then applying a barrier and clean fill. This prevents direct contact with any residual material and provides significant shielding to reduce exposure to radiation from the remaining material.

**Human Health Risk Assessment (Greg Brorby)**

- The human health risk assessment was conducted in accordance with environmental regulatory guidelines and the current state of practice.
- Even though the fish ingestion pathway was identified as a "primary" exposure pathway in the Navy's
- Remedial Investigation report, this pathway was not included in the Navy's risk assessment document.
- The groundwater pathway should have been quantitatively evaluated in the Navy's risk assessment document, given the nature and extent of groundwater contamination and that the groundwater is likely is migrating towards the San Francisco Bay.

**Some recommendations from the Technical Experts include:**

- Navy should address overall stability of the landfill and proposed containment systems as required by CCR Title 27 for Class III landfills that include:
    - Engineering properties of waste materials.
    - Stability and potential displacement or settlement of waste materials during earthquake shaking.
    - Combined effects of potential movement in waste materials and sediment beneath waste materials during earthquake shaking.
    - Stability of landfill and existing and proposed containment systems under static and dynamic conditions.
- Navy should provide summary of performance to date of existing geocomposite landfill cap with respect to burrowing animals.
- Navy should incorporate results of the above assessments into planned additional studies of cover design, other containment features, and long-term monitoring and maintenance programs.
- The Navy should immediately investigate if radium is detected in groundwater above comparison levels in the future, because radium is highly mobile in salt water.
- The Navy should consider removing the existing landfill cap in its entirety due to the extent of radiological contamination and the likelihood of inflicting irreparable harm on its current liner as part of its planned remedial response which would make it unsuitable for reuse.

**The Technical Experts responding to some of the community concerns about Parcel E2**

**LANDFILL CHARACTERIZATION OF PARCEL E2:**

- **Is it really municipal waste?** Based on the descriptions within the Navy's Draft ROD and supporting documents, the contents do appear to meet US EPA guidelines for municipal waste and military landfills closed under municipal waste guidance. The Navy reports the landfill waste consists primarily of wood, paper, plastic, metal, glass, nails, foam, copper wire, cloth, rubber, plywood, ceramics, asphalt, concrete, and bricks, which are mixed with sand, clay, and gravel fill. And in addition to municipal-type wastes and construction debris, industrial and military wastes were also disposed of, including sandblast waste, radio luminescent devices, asbestos-containing debris, paint sludge, solvents, and waste oils. The data indicates that the amount of industrial and hazardous waste is less than amount of municipal-type waste and construction debris. As a result the review of data concluded that the Parcel E-2 landfill qualified as a municipal landfill.

- **Did the Navy adequately assess the effects of earthquake shaking and liquefaction?** Based on observations at other landfills in California, engineered landfills can perform as designed during an earthquake. There was only minor damage to Bay Area landfills following Loma Prieta magnitude 6.9 earthquake in 1989. According to the Navy's reports there was minor cracking of cover soils, no failure of landfill cap resulting in release of landfill materials at Parcel E2 after the 1989 earthquake.

- **The Navy only sampled the interim cap, not the landfill. Does this bound the radiological risk?** While it is correct that the Navy only scanned the cap of the landfill for radiation, which meant they did not scan survey the interior of the fill, the review finds the Navy nevertheless completed adequate characterization of this landfill. The Navy's documents indicate 1,000 soil samples taken to assess radiological contamination. There is an adequate historical record and the evidence from early removal actions to confirm the historical records. It also appears unlikely that radioactive debris from the Pacific Nuclear Testing program found its way into the E2 landfill as the photographic and record evidence indicates the site was opened for disposal a decade after the US halted the program. The radiological goal for radium the Navy has proposed is very conservative, as it is 5 times lower than the EPA recommended standard.

**Next Steps**

The next steps include:

- Arc Ecology will be submitting the technical experts' written comments to the US EPA on August 10th.
- We anticipate that the Navy will be releasing the draft final ROD mid-September 2012 and there will be a 30 day public review period.
- The Navy anticipates that they release their remedial design document to the public in the Summer of 2013.

**Conclusion**

Again, this is a brief summary of the results of this independent review. The Navy still needs to go through the Remedial Design and Remedial Action process for the Parcel E2 landfill and have stated that they will be conducting public meetings in the Bayview Hunters Point community during this process.

We encourage you to go Arc Ecology's website (www.arcecology.org) to look at the technical experts' comments and contact Martha Walters at (415) 643-1190 if you have any additional questions or concerns.

Thank you,

Saul Bloom and Martha Walters
Arc Ecology